Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V (NEW) - EXAMINATION – SUMMER 2016

Subject Code:2150608 **Date:11/05/2016**

Subject Name:Structural Analysis-II

Time:02:30 PM to 05:00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1		Analyse the beam shown in figure (1), by stiffness matrix method	**14**
Q.2	**(a)**	Discuss the Castigliano's theorem. How it will be useful for the analysis of truss?	**07**
	(b)	Explain the Muller Breslau's principle. How it will be useful for the indeterminate beam?	**07**
		OR	
	(b)	Compute the ordinates of ILD for reaction at A for the figure (2).	**07**
Q.3		Analyse and draw BMD for portal frame shown in the figure (3), by using moment distribution method.	**14**
		OR	
Q.3	**(a)**	Explain the term: Distribution factor, carry over factor, carry over moment and stiffness.	**04**
	(b)	Analyze and draw the BMD for the beam shown in figure (4) by moment distribution method.	**10**
Q.4		Analyse and draw BMD for portal frame shown in the figure (5), by using slope deflection method.	**14**
		OR	
Q.4		Determine the support reactions at support D of the given portal frame of figure (6), by using flexibility matrix method.	**14**
Q.5	**(a)**	Compute the vertical deflection of point D of the truss as shown in figure (7). The cross sectional area of member DE and AD are 1500 mm^2 and other members are 1000 mm^2. E = 200 kN/mm^2.	**10**
	(b)	Differentiate the influence line diagram for BM at any section and normal BM diagram. Explain this with taking simple example.	**04**
		OR	
Q.5		Five wheel loads as shown in figure (8), crosses a simply supported beam of span 24 m from left to right. Calculate the maximum positive and negative SF at the center of the span and absolute maximum BM anywhere in the span.	**14**

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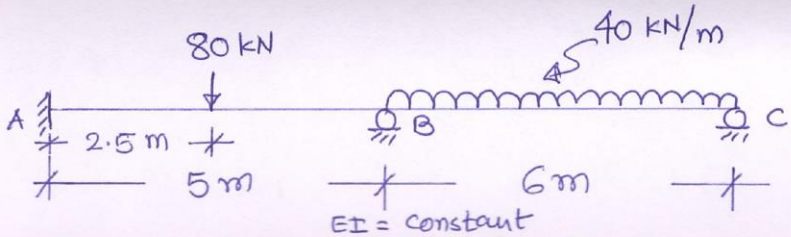
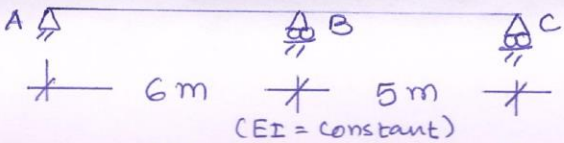


EI = constant

Figure 1 (Q.1)



(EI = constant)

Figure 2 (OR Q.2(b))

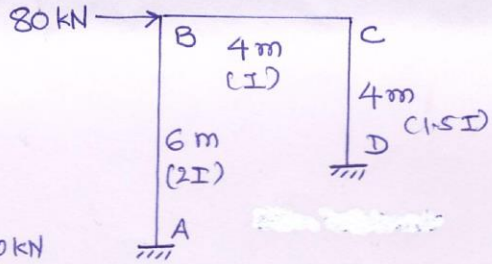


Figure 3 (Q.3)

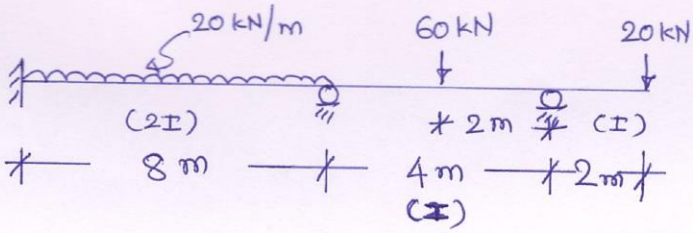


Figure 4 (OR Q.3(b))

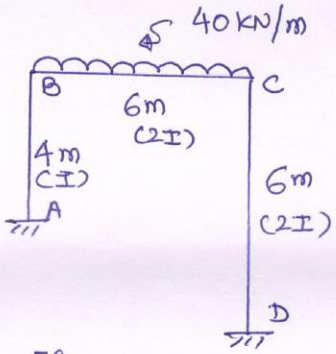
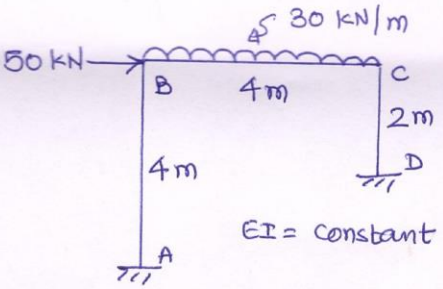


Figure 5 (Q.4)



EI = constant

Figure 6 (OR Q.4)

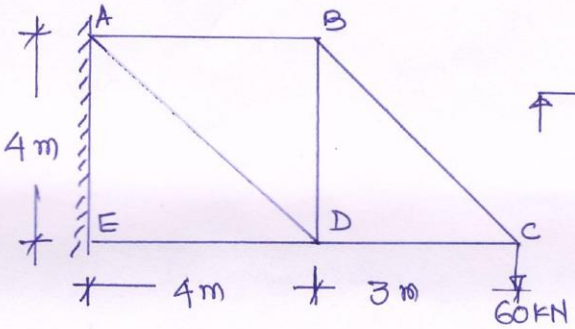


Figure 7 (Q.5 (a))

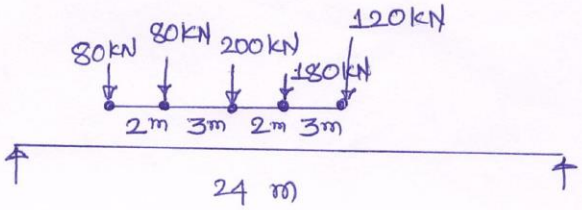


Figure 8 (OR Q.5)